

ing a loss of about \$250,000. The damage to sugar-cane, cotton, and rice was estimated at about 25 per cent. of the total crop in the southern and eastern portions of the state.

Altoona, Blair Co., Pa.: the heavy rains of the 20th and 21st caused unprecedented freshets in the streams in this vicinity; all country roads leading to this city and Hollidaysburg were rendered impassable.

Washington, Washington Co., Pa.: great damage was sustained by the railroads from the very heavy rainfalls of the 20th and 21st; many bridges, and in some places the road bed, were washed away.

Wheeling, West Va., 21st: a destructive freshet occurred here on this date, many bridges in the surrounding country were washed away. At 6 p. m. the large stone bridge over Wheeling Creek gave way. This bridge was constructed in 1842 and was considered one of the landmarks of the city. At Elm Grove, about five miles from Wheeling, nearly all the buildings were flooded, the damage being estimated at \$25,000.

Reading, Pa.: all streams in this (Berks) county were greatly swollen by the heavy rains of the 21st; the lowlands were inundated and several bridges were washed away.

Uniontown, Fayette Co., Pa.: the very heavy rains during the night of the 20th and 21st and following day flooded the lower portions of the town; south of this place farms were flooded, and bridges washed away.

Bellaire, Belmont Co., Ohio: crops on lands adjacent to streams were ruined by the freshet of the 21st, and much fencing was washed away; washouts occurred along all the railroads in this vicinity.

New Haven, Conn.: the heavy rainfall of the 21st flooded the streets and caused damage to goods stored in cellars, etc.

Pittsburg, Pa.: the heavy rains of the 21st submerged the lowlands in this vicinity; numerous bridges, and in some instances out-buildings, were washed away. The Ohio River rose very rapidly on the 22d, reaching the highest stage, twenty-six feet, that has occurred since February 6, 1884. The river rose about eighteen feet in twenty-four hours.

Hot Springs, Garland Co., Ark.: during the night of the 30th and 31st rain fell in torrents from 11 p. m. to 1 a. m.,

flooding the town. In several large hotels the water reached a depth of four feet; many buildings were totally wrecked.

HIGH TIDE.

Cedar Keys, Fla., 19th.

LOW TIDE.

Southport, N. C. 14th.

In the following table are shown the danger-points at the various stations, the highest and lowest depths for August, 1888, with the dates of occurrence and the monthly ranges:

Heights of rivers above low-water mark, August, 1888 (in feet and tenths).

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
<i>Red River:</i>						
Shreveport, La.....	29.9	1	14.0	27	3.0	11.0
<i>Arkansas River:</i>						
Fort Smith, Ark....	22.0	31	11.7	15	1.2	10.5
Little Rock, Ark....	23.0	31	4.8	22	2.4	2.4
<i>Missouri River:</i>						
Omaha, Nebr.....	18.0	7, 8, 10	10.3	29, 30	8.2	2.1
Leavenworth, Kans.	20.0	12	12.4	20, 29	10.7	1.7
Kansas City, Mo.....		12	14.7	31	9.6	5.1
<i>Mississippi River:</i>						
Saint Paul, Minn....	14.5	5	5.7	31	3.0	2.7
La Crosse, Wis.....	24.0	14, 15, 16	7.6	31	4.8	2.8
Dubuque, Iowa.....	16.0	20, 21	7.7	31	5.3	2.4
Davenport, Iowa.....	15.0	22	5.7	7, 31	4.0	2.7
Keokuk, Iowa.....	14.0	19	6.4	8, 9	4.0	2.4
Saint Louis, Mo.....	32.0	15	19.4	6	12.9	6.5
Cairo, Ill.....	40.0	31	24.1	8	12.7	11.4
Memphis, Tenn.....	34.0	31	18.2	10, 11	10.6	7.6
Vicksburg, Miss.....	41.0	1	24.1	19	12.0	12.1
New Orleans, La.....	13.0	1	7.8	25, 26	4.0	3.8
<i>Ohio River:</i>						
Pittsburg, Pa.....	22.0	22	26.0	31	2.3	23.7
Cincinnati, Ohio....	50.0	26	32.0	7, 10	5.5	26.5
Louisville, Ky.....	25.0	28	12.3	10, 11, 12, 16, 17	3.9	8.4
<i>Cumberland River:</i>						
Nashville, Tenn.....	40.0	26	12.6	17	0.9	11.5
<i>Tennessee River:</i>						
Chattanooga, Tenn....	33.0	24	6.2	1, 19, 20	2.0	4.2
<i>Monongahela River:</i>						
Pittsburg, Penn.....	29.0	22	26.0	31	2.3	23.7
<i>Savannah River:</i>						
Augusta, Ga.....	32.0	23	13.1	19, 20	5.9	7.2
<i>Willamette River:</i>						
Portland, Oregon.....		1, 2	6.8	30, 31	4.0	2.8

*For fourteen days.

ATMOSPHERIC ELECTRICITY.

AURORAS.

Only a few displays were noted during the month, the most noteworthy of which was that of the 3d, which was seen only in the Lake region and the Northwest. The following notes relate to the aurora above referred to:

Saint Paul, Minn., 3d: an auroral display was observed between 10.15 and 10.50 p. m.; it consisted of six brilliant streamers of yellowish light, which covered 25° of the horizon and rose to altitude 70°.

Marquette, Mich., 3d: a pale white auroral arch, with several bright streamers, covering about 65° of the northern horizon, was observed from 9.35 to 10.50 p. m.

Alpena, Mich., 3d: a few faint auroral streamers, having an apparent motion from west to east, were observed at 8.30 p. m.; the display was obscured by clouds at 10 p. m.

The observer at Saint Vincent, Minn., reports:

A diffuse auroral light, low in the horizon, was observed at 10.10 p. m., 15th; at 10.40 it had developed into an arch which covered 130° of the horizon and reached an altitude of 55°; at 11 p. m. the aurora waned, but revived again, and its maximum brilliancy occurred at midnight, at which time the display consisted of two bright arches and active "merry dancers," the upper arch having the same dimensions as the first one observed. The display ended during the night.

At Spokane Falls, Wash., a very brilliant and well-defined auroral arch of whitish color was first observed at 3 a. m., 16th; the arch covered 20° of the horizon and rose to altitude 35°; it began to fade at 6.30, and had disappeared at 8 a. m.

Auroras were observed during the month as follows: 2d, Bar Harbor and Orono, Me.; Embarras, Wis. 3d, Bismarck, Kimball, Medford, Pine River, and Webster, Dak.; Cresco and Maquoketa, Iowa; Alpena, Marquette, and Thornville, Mich.; Saint Paul, Minn.; Deuster, Wis. 5th, Dubuque, Iowa. 11th, Davenport and Webster, Dak.; Saint Vincent, Minn.; Fort Maginnis, Mont.; Deuster, Wis. 12th, Moorhead, Minn. 13th, Deuster, Wis. 14th, Eden Centre, N. Y. 15th, Saint Vincent, Minn. 16th, Webster, Dak.; Moorhead and Saint Vincent, Minn.; Fort Maginnis, Mont.; Spokaue Falls, Wash. 17th, Moorhead and Saint Vincent, Minn.; Green Bay, Wis. 18th, Benton Harbor, Mich. 26th, Embarras, Wis. 30th, Keokuk, Iowa. 31st, Grand Forks, Dak.; Pekin, Ill.

THUNDER-STORMS.

It will be seen from the accompanying table that thunderstorms were reported from the largest number (thirty-four) of states and territories on the 4th, and nearly as many (thirty) occurred on the 1st and 16th. They were least extensively reported on the 23d and 24th, on which dates they occurred on the former in nine and the latter date in seven states and territories. In Florida, Georgia, Illinois, Kansas, Louisiana, Michigan, Missouri, Tennessee, and Texas thunderstorms occurred on from twenty-two to twenty-eight days during the month; Illinois and Kansas reporting the maximum number of dates. They occurred on five days, or less, in California, Connecticut, the District of Columbia, Idaho, Maine, Nevada,

Oregon, Rhode Island, Utah, and Washington Territory. There was no state or territory from which thunder-storms were not reported, except Delaware, there being no stations of observation in that state.

Table showing the number of stations in the several states and territories reporting thunder-storms for each day during August, 1888.

Table showing the number of stations in the several states and territories reporting weather during the year ending August, 1900.																																Total No. of days.	
State or Territory.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.		
Alabama.....			2	3	3	1	1		1	3	1	2			1	1	17	18		1	3	2							2	3	1	19	
Arizona.....	1	2								3	2		3	2	6	4					2	4	1	3	4	2	2	2	3	3	4	19	
Arkansas.....	1	1	1	1				1		1	1		1			1												1	1	1	15		
California.....	1	1																														3	
Colorado.....	3		1	4		2					2	3	3	3	3	1	3	2	1	2		2	1					3	1	1	20		
Connecticut.....			1	5													4															3	
Dakota.....	6	4		10	6	1		1		3		1	5	5				3		2							1	1	1			10	
District of Columbia.....				1				1		1								1														5	
Florida.....	2	4	3	4	6	6	4	4	4	4	4	4	3	1	2	2		3	3		3	2	3	4	1	2			2	2	1	27	
Georgia.....	2	2	4	3	3	1	3	4	4	2	3	4	2					2	1	1	1	1	1					2	3	1	2	23	
Idaho.....	2																															1	
Illinois.....	10	5	19	10	5	21	21	4	1	1	6	8	1	6	10	11	8	1	2	5	15	1			8	6	2	1		3	6	28	
Indiana.....	3	4	3	7		3	4	3	1		1	4				4	5	3					1	2	7	3						18	
Indiana Territory.....	1	1	1	1			2	2	1							1	1			2							2	1	1			12	
Iowa.....	8	6	10	5	13	17	10	1	3	15	7	3	3	25	26	7	1	6	1	5	10				2					2	3	25	
Kansas.....		4	13	7	9	8	12	1	1	3	5	3	1	4	3	5	1	2	8	3	1		1		3	5	8	6	2	5	1	28	
Kentucky.....	2	1	1	3		1	1			1		1						1	2		1				1	2	1					14	
Louisiana.....	3	1	4	2	2		1	6	3	5	4	2		1	2	4	2	3	5	4	2	3	1	4	1		1	4	4	4	3	28	
Maine.....																									5	2	3					7	
Maryland.....	1			1	3			4				3				2						1										8	
Massachusetts.....		1	1	4		1											6				3	2					5					22	
Michigan.....	1	15	11	6		4	4	1		2	1			4	4	13	1			1	4		1	1		1	3	3		9	7	13	
Minnesota.....	3	8		7	7			1	1	1			1	3	1	2	1		3													10	
Mississippi.....			2	1					1		1		1				1	1		1	4	1							1	2	2	10	
Missouri.....	2		5	4	5	5	5	1		2	1		1			1	1	1	1	4	1			3	1	2	2		1	2	2	12	
Montana.....	1	4	3	2	1			1		1		1	1				1	1		3	5	2				2						18	
Nebraska.....		6	6	7	9	4			1	7	3	1		6	8	1		1	3	5	2											1	3
Nevada.....																1	1			1												8	
New Hampshire.....								1							1	1	1		1						1	2	2						12
New Jersey.....	2			4	3			5		1	6			3	3	1				4							1	4				17	
New Mexico.....	2									2		1			1	2	2	2	1	3	3	4		2	2	2		1	2	1		13	
New York.....			3	12		3	8					2	1			7	5					1						4				1	14
North Carolina.....		2	2			1	1	4	5	3	2	1	4					1	3		1											21	
Ohio.....	5	3	12	11	1		13	1	1		3	16		6	1	9	3	1		3	2					1	2					5	
Oregon.....	1																															18	
Pennsylvania.....	2		5	17	8	1	1	12	2		1	21	13	7	1							3					1	9	1			1	
Rhode Island.....																																20	
South Carolina.....		6	8	4	3		3	7	12	8	1	2	2							5	2	4	2					1	2	6	8	26	
Tennessee.....	1	3	12	8	8	1	3	7	3	1	4	3		1	1	4	6	10	5	3	3	1					2	4	2	4	10	27	
Texas.....	4	4	2				3	4	6	1	2	4	5		2	2	3	5	9	3	1	1	4	6	4	3	4	5	4	7	3	4	
Utah.....	1													2	1	1																18	
Vermont.....	1			1			1	3	1		1			1	1	3	2	1														3	
Virginia.....	5	1	2	1	5	1	2	6	4		1	5					2	3	5	4	2	1			1	3	3	1	1			2	
Washington.....	2	1																														9	
West Virginia.....			1	2	1		1	1				3				1	1															1	
Wisconsin.....		6	5	2	1	1	1							5	4	7		1		1												12	
Wyoming.....	6	2		1		2	1	1			1	3	1	4	2																	15	
Number of States reporting.....	30	26	29	34	22	21	23	29	22	17	26	28	18	19	21	30	25	25	21	19	23	17	9	7	15	19	24	18	20	23	23		

MISCELLANEOUS PHENOMENA.

DROUGHT.

Lynchburg, Va., 9th: reports from Appomattox county state that while some sections of that county have had partial rains there are other portions where the rain during the past two months has not been sufficient to wet the ground, and corn and tobacco are suffering in consequence.

Palestine, Tex., 9th: the severe drought which caused some damage to crops, especially to cotton, was broken on this date.

Oak Grove, Christian Co., Ky., 10th: corn and tobacco in this section have suffered much injury from the dry weather.

Nashville, Tenn.: the rain, 1.56 inches, which fell between the 16th and 18th broke the drought, which has been very severe for the past two weeks.

Winnemucca, Nev., 21st: stock men report a great scarcity of water on the ranges, and that the stock is suffering in consequence; the springs in the mountains are drying up.

Sebastian, Fla., 23d: on account of the continued dry weather the oranges in this section are falling from the trees.

Petersburg, Va., 31st: the drought in the southern counties of Virginia has become very serious; in some sections there has been very little rain for several months, and the crops are scorched; all creeks and small streams are drying up.

Pueblo, N. Mex., 31st: owing to the dry weather stock men in this and adjoining counties have moved their cattle to Kansas; little or no hay has been cut, except where water for irrigation was to be had, and in some sections entire crops were lost on account of insufficient water supply.

Birmingham, Oakland Co., Mich., 31st: the drought during the month has been most severe; in many places the farmers

are unable to plow their land, the dry soil reaching the depth of four feet below the surface.

Thornville, Lapeer Co., Mich.: the month has been very dry, corn has been greatly injured, and pastures are almost all killed by drought.

FOREST AND PRAIRIE FIRES.

Los Angeles, Cal.: extensive fires prevailed about Anaheim, in the Upper Santa Anna Valley, and below Norwalk, Los Angeles Co., on the 13th. Smoke from large mountain fires was observed over the Sierra Madre range northeast of this city on the 22d and 23d.

Ishpeming, Marquette Co., Mich.: forest fires burned on all sides of this village and extended on both sides of the railroad for many miles on the 27th. Several buildings were burned.

Helena, Mont.: on the 31st a disastrous prairie fire raged on the ranges in northern Montana, extending from Maria River to the Sweet Grass Hills, a distance of fifty miles; the winter range of the Fenton and Saint Louis Cattle Company was destroyed with a large amount of hay.

Forest and prairie fires occurred also as follows: Fort Sill, Ind. T., 1st to 7th; Fort Reno, Ind. T., 3d to 7th, 14th; Red Bluff, Cal., 11th to 20th, 23d to 28th; San Diego, Cal., 25th.

HALOS.

The dates on which solar halos were observed over the greatest extent of territory during August were the 7th, 14th, 16th, 20th, 27th, and 31st; they were least numerous on the 1st, 2d, 4th to 6th, 7th to 9th, 13th, 22d to 25th, 28th, and 30th. They were observed on from eight to twenty dates in Illinois,